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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,576	07/30/2001	Bruce J. Currivan	1875.0600001	9540

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EXAMINER	
PATEL, JAY P	

ART UNIT	PAPER NUMBER
2666	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/916,576	CURRIVAN ET AL.	
	Examiner	Art Unit	
	Jay P. Patel	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5-11* is/are allowed.

6)☒ Claim(s) *1-4,12, 15-17 and 18* is/are rejected.

7)☐ Claim(s) *13,14 and 19-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 12 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Tranchewsky et al. (U.S. Publication 2001/00055311 A1).

3. Regarding claim 12, Tranchewsky discloses a system for detecting collisions in a shared communications medium, comprising:

A receive path adapted to generate a first intermediate signal, a second intermediate signal, and a data symbol sequence from an input signal (**page 33 paragraph 300 last line continued onto page 34 lines 1-6**). The preamble is structured in such a way that multiple copies of the symbol sequence are transmitted sequentially. Therefore, a copy or a set of copies is interpreted as multiple intermediate signals and the symbol sequences within the copies are themselves data symbol sequences. Since a burst of transmission is detected at the receiver, a receive path must be established;

A preamble detection module adapted to generate a correlation metric from the first intermediate signal (**Paragraph 300 continued onto page 34 lines 2-4**). Each N-

symbol sequence is spectrally white which by example has a nonzero autocorrelation at one of the N sequences;

A power measurement module adapted to generate a power indication signal from the second intermediate signal (**Paragraph 300 continued onto page 34 lines 10-11**). It is explicitly stated that the first sub circuit estimates the received signal power over a N-symbol window.

A signal to noise ratio (SNR) measurement module adapted to generate a SNR indication signal from the second intermediate signal and the data symbol sequence (**Paragraph 300 continued onto page 34 lines 12-13**). The second sub circuit estimates the gain necessary to maximize the SNR and therefore a measurement of SNR is required if a proper gain is to be estimated.

And a processing module adapted to characterize the input signal (**Page 2, paragraph 11, 2nd column; summary of collision detection process**). Since multiple copies of the signal are generated, they can be viewed as multiple intermediates of the same signal where multiple copies are used to estimate the signal power and the SNR from the preamble structure. Furthermore, based on these measurements, the collision detection process is implemented to detect a collision.

4. In regards to claim 18, Tranchewsky discloses a method of detecting collisions in a shared communications medium, comprising:

(a) Receiving a signal (**page 27, 2nd column, paragraph 246 lines 34-35**). The filter/correlator receives and filters the input signal.

(b) Calculating a correlation metric from the signal (**page 27, 2nd column, paragraph 246 lines 34-38**). The filter/correlator filters the input signal using coefficients from the preamble sequence and approximates the correlation using the magnitude approximator and a squaring function.

(c) Measuring a signal power during a portion of the received signal (**Paragraph 300 continued onto page 34 lines 10-11**). It is explicitly stated that the first sub circuit estimates the received signal power over a N-symbol window.

(d) Measuring a signal to noise ratio (SNR) during a portion of the signal (**Paragraph 300 continued onto page 34 lines 12-13**). The second sub circuit estimates the gain necessary to maximize the SNR and therefore a measurement of SNR is required if a proper gain is to be estimated.

(e) Classifying the received signal as a collision or a non-collision based on the logical combination of the correlation metric, the measured signal power, and the SNR (**Page 2, paragraph 11, 2nd column; summary of collision detection process**). Since multiple copies of the signal are generated, they can be viewed as multiple intermediates of the same signal where multiple copies are used to estimate the signal power and the SNR from the preamble structure. Furthermore, based on these measurements, the collision detection process is implemented to detect a collision.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trachewsky et al. (U.S. Publication 2001/00055311 A1), in view of Terry (U.S. Patent 6178161 B1).

7. In regards to claim 1, Trachewsky teaches the following limitations:

A method of detecting collisions in a shared communications medium, comprising:

(a) Receiving a signal (**page 27, 2nd column, paragraph 246 lines 34-35**). The filter/correlator receives and filters the input signal.

(b) Calculating a correlation metric from the signal (**page 27, 2nd column, paragraph 246 lines 34-38**). The filter/correlator filters the input signal using coefficients from the preamble sequence and approximates the correlation using the magnitude approximator and a squaring function.

(c) Measuring a signal power during a portion of the received signal (**Paragraph 300 continued onto page 34 lines 10-11**). It is explicitly stated that the first sub circuit estimates the received signal power over a N-symbol window.

8. Trachewsky fails to teach the limitation of classifying the received signal as a collision when the SNR is less than a second threshold. Terry teaches the above-mentioned limitation of comparing the SNR with a predetermined threshold **(column 16, lines 4-8 and figure 9)**. A short-term SNR is determined for the transmission direction and a comparison is made to determine whether the SNR is less than a predetermined threshold. It would be obvious to one of ordinary skill in the art to incorporate the SNR

measurement module disclosed by Terry into the collision detection criteria disclosed by Trachewsky. The proper motivation comes from Trachewsky where he states that " to effectively operate in communications network environments a need exists for a method for distributing sets of collision resolution parameters in a frame-based communications network" (**page 2, 1st column, paragraph 10 lines 51-54**).

9. In regards to claim 2, the primary reference Trachewsky, also teaches correlating the received signal with a second signal that corresponds to a preamble sequence **(page 27, 2nd column, paragraph 246 lines 34-38).** The input bits, which are components of the first signal, are filtered using a coefficient that is a time-reversed copy of the preamble, which is respectively the second signal.

10. In regards to claim 3, the primary reference Trachewsky also teaches measuring an SNR of a data portion of the received signal **(Page 2, paragraph 11, 2nd column lines 28-34)**. The preamble is structured in such a way that the multiple copies of data sequences are sequentially transmitted **(page 34 1st column, paragraph 300 lines 1-3 and lines 9-13)**. Therefore, when an estimate is taken to maximize the SNR, the data sequence is taken into account.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tranchewsky et al. (U.S. Publication 2001/00055311 A1), in view of Terry (U.S. Patent 6178161 B1) and further in view of Frantzeskakis (European Patent Application 99600019.6, publications number EP 1069554 A1).

12. With regards to claims 4, Tranchewsky in combination with Terry teaches all the limitations of claim 1 as described above. They fail to explicitly teach however, the

limitation of receiving one or more transmissions from a time division multiple access mediums. Frantzeskakis teaches the above-mentioned limitation (**column 1, paragraph 1, lines 5-7**). Although his application relates to power detection in burst data transmission in TDMA, Frantzeskakis also incorportates a collision control logic in his application (**column 2, paragraph 4, lines 53-55**). Therefore, it would be obvious to one skilled in the art that the collision detection method disclosed by Trachewsky can also be incorporated using a TDMA burst transmission. Since TDMA is a frame-based technique, the proper motivation comes from Trachewsky, "to effectively operate in communications network environments a need exists for a method for distributing sets of collision resolution parameters in a frame-based communications network" (**page 2, 1st column, paragraph 10, lines 51-54**).

13. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trachewsky et al. (U.S. Publication 2001/00055311 A1), in view of Burns et al. (U.S. Patent 5657326).

14. In regard to claim 15, the primary reference Trachewsky teaches all the limitations of claim 12 as stated above; Trachewsky fails to explicitly teach the limitation of having the first intermediate signal be a baseband signal. Burns teaches the above-mentioned limitation in his collision detection system (**column 7, lines 32-33**). The output of the antenna is put through a band pass filter so that the signal band is extracted. It would be obvious to one of ordinary skill in the art to incorporate the band pass filter from Burns' circuit into the collision detection process disclosed by Trachewsky. The proper motivation comes from Burns where he states, "it is desirable

to provide a technique for true collision detection in a wireless environment, to enable more efficient protocols, such as CSMA/CD" (**column 2, lines 21-23**).

15. In regards to claim 16, the primary reference Trachwesky teaches all the limitations of claim 12 as stated above; Trachewsky fails to explicitly teach the limitation of having the second intermediate signal be a soft decision signal. Burns teaches the above-mentioned limitation in his collision detection system (**column 7, lines 21-23**). After bandpass filtering, a baseband signal is supplied to a down converter to convert the signal to an intermediate signal and since a soft decision signals is down-converted through a demodulator, the output of the down converter in Burns' circuit is a soft decision signal. Therefore, it would be obvious to one of ordinary skill in the art to incorporate the down converted in Burns' circuit into the collision detections process disclosed by Trachewsky. The proper motivation comes from Burns where he states, "it is desirable to provide a technique for true collision detection in a wireless environment, to enable more efficient protocols, such as CSMA/CD" (**column 2, lines 21-23**).

16. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tranchewsky et al. (U.S. Publication 2001/00055311 A1) in view of Frantzeskakis (European Patent Application 99600019.6, publications number EP 1069554 A1).

17. With regards to claim 17, Trachwesky teaches all the limitations of claim 12 as stated above. Trachwesky however, fails to explicitly teach however, the limitation of receiving one or more transmissions from a time division multiple access mediums. Frantzeskakis teaches the above-mentioned limitation (**column 1, paragraph 1, lines 5-7; the invention relates to detection of power in burst transmission systems**

such as TDMA). Although his application relates to power detection in burst data transmission in TDMA, Frantzeskakis also incorporates a collision control logic in his application (**column 2, paragraph 4, lines 53-55; where messages are exchanged between the frame control logic and the collision control logic**). Therefore, it would be obvious to one skilled in the art that the collision detection method disclosed by Trachewsky can also be incorporated using a TDMA burst transmission. Since TDMA is a frame-based technique, the proper motivation comes from Trachewsky, "to effectively operate in communications network environments a need exists for a method for distributing sets of collision resolution parameters in a frame-based communications network" (**page 2, 1st column, paragraph 10, lines 51-54**).

Allowable Subject Matter

18. Claims 5-11 are allowed.

19. The following is a statement of reasons for the indication of allowable subject matter:

Claim 5 is allowable over prior art of record since the cited references taken individually fail to disclose a method of detecting collisions in a shared communications medium, comprising:

(a) Receiving a signal from the shared communications medium;

(b) Generating a correlation metric from the signal;

(c) Measuring a signal to noise ratio (SNR) of the received signal when the correlation metric is greater than a first threshold',

(d) Measuring a signal power when the correlation metric is less than or equal to the first threshold;

(e) Classifying the signal as a collision when the measured signal power is greater than a second threshold; and

(f) Classifying the signal as a collision when the measured SNR is less than a third threshold.

It is noted that the closes prior art Trachewsky et al. (U.S. Publication 2001/00055311 A1) shows a collision detection process in which multiple copies of a preamble are measured for error power and are compared to predetermined first and second thresholds and based on the comparison, it is decided whether a collision has occurred (**See Page 2, paragraph 11, 2nd column; summary of collision detection process**). However, Trachewsky fails to render obvious the above-mentioned underlined limitations functioning together to form the method, either individually or in combination with other references made of record.

20. Claims 13-14 and 19-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

a. Eastmond et al. (U.S. Patent 5940400) shows a collision detection based on the degree of correlation between received and transmitted signals.

b. Burns et al. (U.S. Patent 5657326) shows a radio based collision detection method and apparatus for wireless networks.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jpp 01/04/2005
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